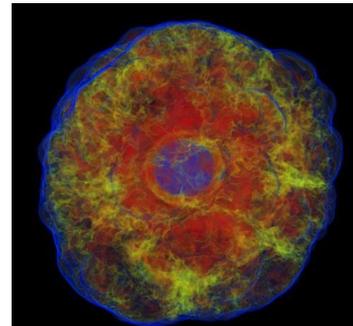
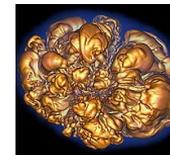
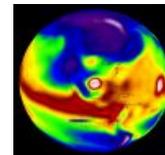
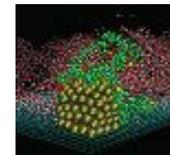
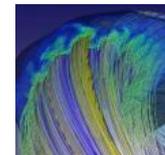
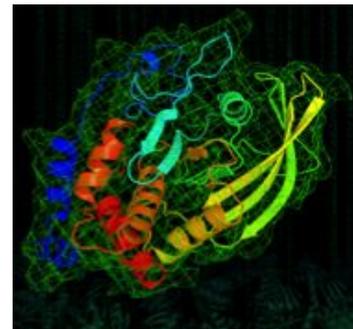
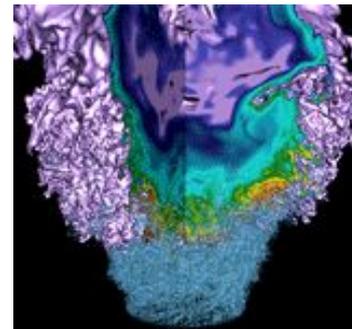


NUG Monthly Meeting



15 April, 2021

Today's plan



- Interactive - please participate!
 - Raise hand or just speak up
 - [NERSC User Slack](#) (link in chat), #webinars channel
- Agenda:
 - Win-of-the-month
 - Today-I-learned
 - Announcements/CFPs
 - Topic of the day: **TODO**
 - Coming meetings: topic suggestions/requests?
 - Last month's numbers

Win of the month



Show off an achievement, or shout out someone else's achievement, e.g.:

- Had a paper accepted
- Solved a bug
- A scientific achievement (maybe candidate for Science highlight, or **High Impact Scientific Achievement award**)
- An **Innovative Use of High Performance Computing** (also a candidate for an award) (<https://www.nersc.gov/science/nersc-hpc-achievement-awards/>)

Please let us know of award-worthy work from you or your colleagues - tell us what you did, and what was the key insight?

Today I learned



What surprised you that might benefit other users to hear about?
(and might help NERSC identify documentation improvements!)

Eg:

- Something you got stuck on, hit a dead end, or turned out to be wrong about
 - Give others the benefit of your experience!
 - Opportunity to improve NERSC documentation
- A tip for using NERSC
- Something you learned that might benefit other NERSC users

"If we knew what it was we were doing, it would not be called research, would it?" -
Einstein

Announcements and CFPs



See weekly email for these and more:

- Allocation reduction dates this year will be **May 4** and **September 7, 2021**.

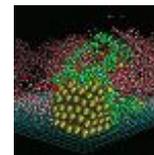
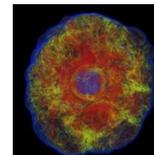
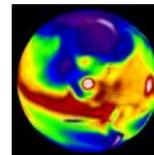
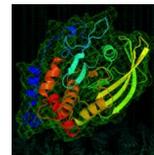
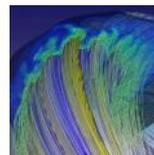
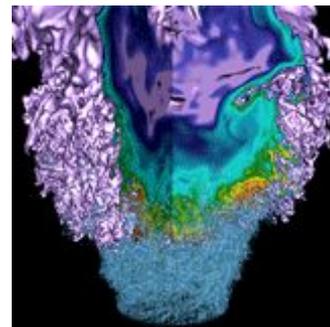
Training Events:

- Learn to Use MANA Transparent **Checkpointing** Tool on **May 7**
- Sign Up for **Timemory** ECP Tutorial (**April 19 & 26**) to Simplify Monitoring Your Application

Maintenance:

- **04/21/21** 07:00-20:00 PDT, **Scheduled Maintenance**
- **HPSS Archive Maintenance April 11-16 (Sun-Thur); All Data in Archive Unavailable for Duration**

Topic of the day: 2020 in Review: NERSC's Annual Report



What does NERSC actually do with these?



- Annual survey
- Post-ticket survey
- Nominations for:
 - HPC Achievement awards
 - Science highlights

Today:

- Why we collect it
- How we use it
- How you can help improve NERSC's support for your needs

NERSC's immediate stakeholder



... is the DOE Office of Science

What do *they* want?

- To know that what NERSC provides is helping its users to further DOE research goals

Our annual report is an important artifact for demonstrating this.

<https://www.nersc.gov/news-publications/publications-reports/nersc-annual-reports/>



What can NERSC do?



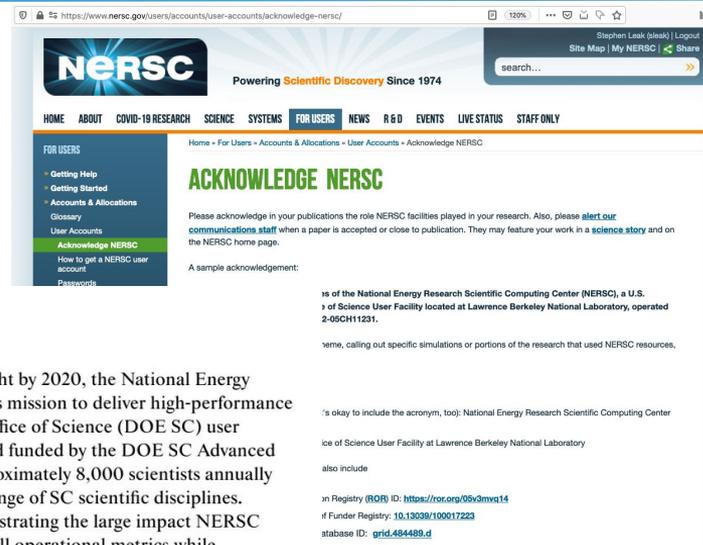
NERSC has, broadly, 2 tools for satisfying our immediate stakeholder:

1. Find out what our users have achieved and showcase it
2. Find out what is impeding our users' progress and make corresponding improvements

Showcasing User Achievements



1. Counting publications
(more publications == more evidence that DOE investment in NERSC is reaping dividends)



Executive Summary

Despite the global COVID pandemic and the many challenges brought by 2020, the National Energy Research Scientific Computing Center (NERSC) was able to fulfill its mission to deliver high-performance computing (HPC) capabilities to the U.S. Department of Energy's Office of Science (DOE SC) user community. Managed by Lawrence Berkeley National Laboratory and funded by the DOE SC Advanced Scientific Computing Research Office, NERSC currently serves approximately 8,000 scientists annually who are working on more than 900 research projects spanning the range of SC scientific disciplines. In 2020 more than 1,800 refereed publications cited NERSC, demonstrating the large impact NERSC continues to have on the community. In addition, NERSC achieved all operational metrics while

How you can help:

Citing NERSC helps us to find your publications via online search

<https://www.nersc.gov/users/accounts/user-accounts/acknowledge-nersc/>

Showcasing User Achievements



2. Science Highlights, vignettes, achievement awards

(Significant achievements to be highlighted)

How you can help:

Nominate work! Your own or somebody else's

The screenshot displays the NERSC website interface. At the top, the NERSC logo is accompanied by the tagline "Powering Scientific Discovery Since 1974". A navigation menu includes links for HOME, ABOUT, COVID-19 RESEARCH, SCIENCE, SYSTEMS, FOR USERS, NEWS, R & D, EVENTS, LIVE STATUS, and STAFF ONLY. A search bar is located in the top right corner.

The main content area features a news article titled "NERSC & LCLS Team Up on SARS-CoV-2 Research". The article is categorized under "Scientific Achievement" and "Significance and Impact". It describes the collaboration between NERSC and researchers at the SLAC National Accelerator Laboratory to study the SARS-CoV-2 virus. The article includes a photograph of the laboratory interior.

Below the article, there is a "Research Details" section with a list of bullet points:

- A team led by Hasan DeMirci's group at K... study two crystal forms of the SARS-CoV-2 near-physiological temperature, which offer drug-repurposing studies.
- LCLS/SLAC, NERSC, and LBNL's Comput... an optimized pipeline that included improve seamless portability from LCLS to NERSC... job submission for optimized node sharing.

At the bottom of the article, there is a logo for the U.S. DEPARTMENT OF ENERGY Office of Science.

Overlaid on the right side of the screenshot is a "NERSC SCIENCE HIGHLIGHTS SUBMISSION FORM". The form includes instructions for users to submit their science highlights, including a description of the submission process and a list of required documents:

- Science Highlight Story Template (optional, but useful) (MS Word) (PDF) (Pages)
- Science Highlight Presentation Slide Template (MS Powerpoint) (PDF)

The form also includes a section for "Lead Researcher on NERSC Project (required)" and "Additional Investigators".

<https://www.nersc.gov/science/science-highlight-submit/>

Seeking and acting on user feedback



NERSC Annual Survey

Expert analysis of scored and text questions help us identify what is working and what to improve

How you can help:
Participate in the survey!

And if something isn't working well, tell us what and why

1.1.3 Factors Affecting Satisfaction

The survey analysis from NBRI identified a number of high-impact themes across the quantitative and qualitative survey questions — that is, survey questions and user comments which had high impact on the overall satisfaction rating. The highest impact categories for NERSC user satisfaction, as identified by NBRI, are Services and Computing Resources, with some specific high-impact themes being:

- **Technical Support:** The ability of NERSC staff to quickly and effectively resolve technical issues had a positive impact on overall satisfaction, according to NBRI's statistical analysis.
- **Response Time:** Most user questions are addressed promptly, contributing to high satisfaction scores.

1.1.4 Understanding and Addressing Dissatisfaction in Users

We aim each year to identify and address sources of dissatisfaction. The primary sources of dissatisfaction in 2019 were queue wait time and system downtimes. In 2020 we made several changes to improve queue wait time:

- In early 2020 the charge factors on Cori-KNL and Cori-Haswell were adjusted to better reflect the real-world performance realized by many users. This resulted in a lower charge on KNL relative to Haswell and helped balance demand among the two types of nodes. As a result, queue wait times were shortened on Haswell and remained reasonable on KNL.
- A combination of improvements to Slurm and adjustments to queue policy have led to very high utilization throughout 2020, which had the effect of making more hours

What can NERSC do to serve you better?

This question elicited 404 responses. The most common were related to:

- The amount of time Cori was unavailable due to maintenance
- Queue wait times
- Better policing of (other) users over-using the shared login nodes
- Improve documentation.

Sample user comments

- *Queue wait times are still a problem. Other than that, the NERSC should serve as a model for computing centers worldwide.*
- *It would be helpful if NERSC were unavailable for maintenance less often.*
- *During monthly maintenance, it would be extremely helpful to keep at least some login nodes available so that users can still do code development work.*

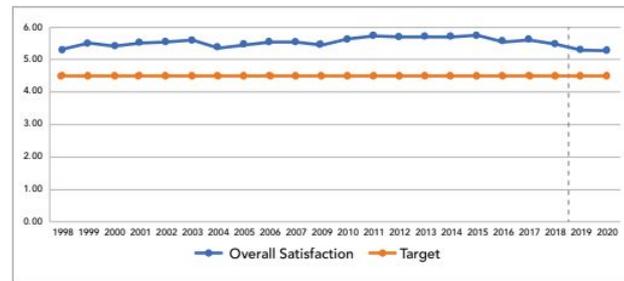


Figure 1-4. Overall satisfaction metric over time since the survey was first implemented. Scores before 2019 (left of the dotted line) are adjusted from the previous 7-point scale to the current 6-point scale. The algorithm used to adjust from the 7-point-scale to the 6-point scale was described in the Operational Assessment report for 2019.

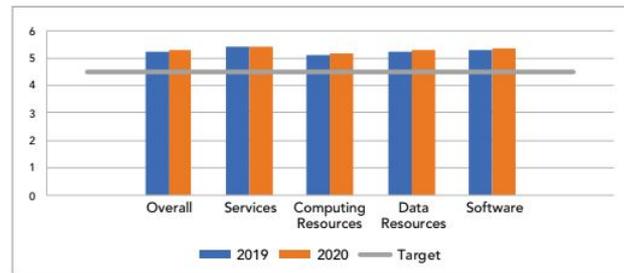
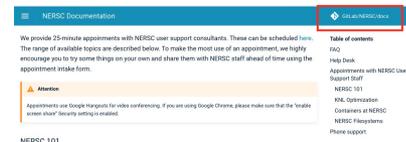


Figure 1-5. Average satisfaction scores for each category.

Identified pain points



	How you can help:
<p>Queue wait times</p> <ul style="list-style-type: none">● Resource constraint, hard to avoid● NERSC works to improve system utilization so that compute cycles are not wasted	<ul style="list-style-type: none">● Showcase your work● Shorter, wider jobs● Try flex jobs and checkpointing to work with the scheduler
<p>Documentation</p> <ul style="list-style-type: none">● Detailed but complex, challenging for new users● Documentation improvements and "NERSC 101" consulting appointments	<ul style="list-style-type: none">● Join the effort!● NERSC docs are a public gitlab repo 
<p>Downtimes</p> <ul style="list-style-type: none">● Disruptive, especially with no second system to use during scheduled maintenance● Perlmutter is expected to have less-disruptive maintenance	<ul style="list-style-type: none">● Prepare for Perlmutter You can request access to Cori's GPU nodes development system at https://help.nersc.gov

Other parts of the annual report



- Operational metrics (eg "Last month's numbers", expanded)
- Innovative work to improve NERSC operations and usability

Ultimately, NERSC is reviewed based on **how well it supports the success of our users.**

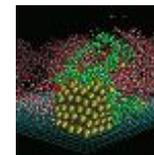
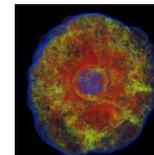
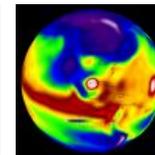
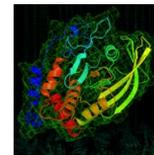
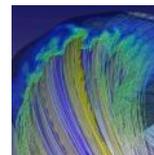
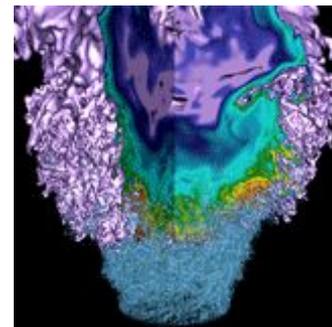
So you can help NERSC by:

- Making your successes known
 - Citing NERSC and nominating work for science highlights and awards all helps
- Letting us know what works well, and what poses difficulties
 - The annual survey and ticket system are good mediums

Past reports, and (soon) the 2020 report, can be found at

<https://www.nersc.gov/news-publications/publications-reports/nersc-annual-reports/>

Q&A / Discussion



Coming up



Topic requests/suggestions?

- Eg: Perlmutter overview (non-GPU)?***
- GPU porting guide?

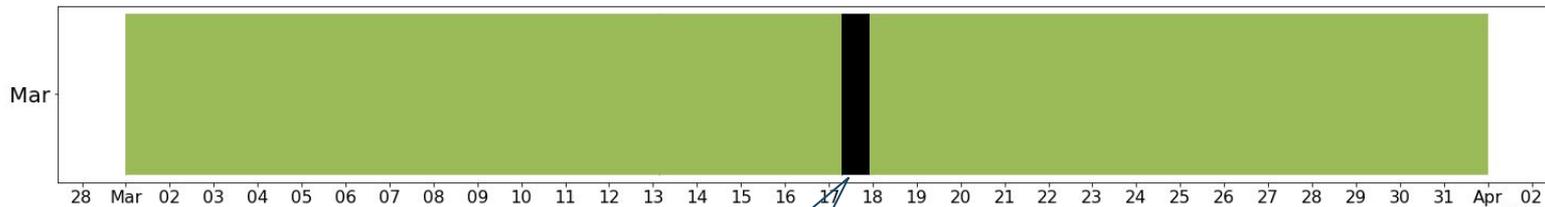
We'd love to hear some lightning talks **from NERSC users** about the research you use NERSC for!

Last month's numbers - March



Scheduled and overall availability:	Scheduled	Overall
Cori	100%	98.0%
HPSS	100%	98.5%
CFS	100%	100%

Cori: 1 outage (Monthly scheduled maintenance)



Scheduled maintenance

Last month's numbers - March



Cori Utilization: 91.3%*

Large jobs: 40.8%

New Tickets: 618

Closed Tickets: 670

Backlog at 1 Apr: 519

* Draining the nodes to run large jobs may have reduced overall utilization compared to recent months



Thank You



U.S. DEPARTMENT OF
ENERGY

Office of
Science

